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Lighthill, August 7

A POPULAR TREATISE

ON

DEAFNESS:

ITS CAUSES AND PREVENTION.

BY DRS. LIGHTHILL.

EDITED BY

E. BUNFORD LIGHTHILL, M.D.

WITH ILLUSTRATIONS.

"HE THAT HATH EARS TO HEAR, LET HIM HEAR."

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Dedication.

TO

J. M. CARNOCHAN, M.D.,

SURGEON-IN-CHIEF TO THE N. Y. STATE HOSPITAL AND PROFESSOR OF
CLINICAL SURGERY TO THE N. Y. MEDICAL COLLEGE,

IN ADMIRATION OF THE

HIGH PROFESSIONAL ATTAINMENTS WHICH HAVE PLACED HIM AMONG

THE FIRST OF LIVING SURGEONS, AND IN

GRATEFUL ACKNOWLEDGMENT OF PROFESSIONAL KINDNESS,

THESE PAGES ARE

RESPECTFULLY INSCRIBED.

P R E F A C E.

DURING an extensive and constant practice, devoted to a considerable extent to the treatment of diseases of the Ear, the Authors have had abundant opportunities of observing the fact, that in a large number of cases the loss or impairment of hearing, originates from gross mismanagement of the Ear, evincing, on the part of the general public, a deplorable degree of ignorance in regard to matters concerning this highly valuable organ.

The present little volume owes its existence to these observations and to a sincere desire to preserve the sense of hearing as much as possible, by disseminating a proper knowledge of the causes which produce deafness, and the means best calculated for its prevention.

The Authors have endeavored to treat the sub-

ject as comprehensively as is practicable in a work of this character, by explaining the Anatomy and Physiology of the Ear, and describing those of the diseases of this organ, most destructive to hearing.

They have abstained from giving directions for treatment, (except in a few cases,) as by furnishing receipts and formulas for treatment, in a popular treatise, persons are apt to be induced to constitute themselves their own physicians, a practice always productive of more injury than benefit, especially when applied to an organ as complicated and delicate as the Ear, which requires a most thorough examination, before suitable treatment of any kind can be instituted, even by competent medical men.

Should the information contained in the following pages accomplish, in any degree, the object in view, the Authors would consider themselves abundantly repaid for their labor.

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8 BOYLSTON PLACE, BOSTON. }

February, 1862.

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DEAFNESS:

ITS CAUSES AND PREVENTION.



THE VALUE OF HEARING.

HEARING is one of the most important of our senses. Considering it as a means of obtaining information, in infancy especially, it is more important even than sight, for without it, speech, the peculiar attribute of man, cannot be developed. Its importance for social intercourse, intellectual improvement, and for communication with the outer world, cannot be over-estimated.

The pleasures which we derive from it are numerous, intense and varied, and contribute continually to embellish life. Through no other sense can our soul receive such profound impressions as

through that of hearing, a fact which is constantly demonstrated. The solemn notes of the organ appeal at once to the heart, and lift our thoughts involuntarily to the Throne of Grace. The exciting strains of martial music stimulate courage and bravery, and deeds of the greatest daring are performed under its soul-inspiring influence. The mournful strains of a funeral dirge move our heart to sadness, while the lively and pleasant music of a ball-room orchestra drives away care, cheers our spirit, and induces us to perform a series of movements, which, if done without its influence, would expose us to extreme ridicule.

The chirping of insects, the songs of birds, the rustling of the leaves, the gurgling of the brook, the roar of the ocean, and the hum of the busy world around us, are sounds ever pleasant and contribute largely to our happiness. But far more soul-stirring and melodious than all those enumerated, is the human voice, which is capable of giving utterance to sweeter sounds than any thing else in creation. To be incapable of hearing that voice is an affliction great indeed.

The Rev. Dr. Kitto, who became deaf at the

age of twelve years, in consequence of a fall from a housetop, says, in reference to his never having heard the voice of his children: "If there is one thing arising out of my condition, which more than another fills my heart with grief, it is this: to see their blessed lips in motion, and to hear them not, and to witness others moved to smiles by the sweet peculiarities of infantile speech, which are incomprehensible to me, and which pass by me like the idle wind."

THE GREAT DISADVANTAGES OF DEAFNESS.

Good hearing is requisite in every department of life for the rapid interchange of our thoughts, ideas, and wants, and its loss or impairment a misfortune which makes itself felt at every step, and seriously interferes with our usefulness and success in all relations in life. It is a mildew to fond hopes and aspirations, and debars talent and genius from reaping their legitimate reward.

The inability of the fond mother to hear the anxiously expected cry, uttered by her new-born babe at its entrance into the world, or of the affec-

tionate child to hear the dying request of a beloved parent, must be a sad deprivation.

Whether in Church or Theatre, Lecture-Room or Opera-House, in the Family Circle or surrounded by the pleasantest company, the deaf are constantly in a dreary and unbroken solitude.

In this age of progress and improvement, it is necessary to have our senses perfect, even in the most ordinary business transactions, in order to keep pace with the times,—the necessity of elevating the voice, and of frequently repeating sentences while speaking to deaf persons, as well as the many mistakes arising from misapprehensions, are annoyances which we avoid as much as possible by employing or transacting business with those, who hear readily. Besides detracting so much from the pleasures and advantages of life, deafness exercises a most baneful effect upon the temper and disposition, and presents in that respect the most striking contrast to the effect produced by blindness. The blind are generally cheerful, frank, and sociable, but the deaf, on the contrary, are suspicious, morose, melancholic and unsociable to a degree, and constantly considering themselves the subject of remarks and ridicule, grow irritable and quarrelsome.

The lives of the poet Milton and the great musician Beethoven, illustrate most forcibly the comparative effects produced upon the temper by blindness and deafness.

Milton, though lamenting in the most touching strains his bitter calamity, still retained a cheerful and contented disposition, which he repeatedly manifests in some passages of his "Paradise Lost;" while Beethoven, who became deaf in the prime of life, had all his latter years darkened by anguish, gloom and the deepest despair, and could scarcely find any alleviation of his misery from the enjoyment of the remaining senses.

The sympathy which should be accorded to the deaf is usually withheld, as their infirmity is not so striking to the beholder as that of blindness. The mistakes arising from the latter condition move our hearts to pity, while laughter and merriment are often excited by the ludicrous mistakes of the deaf, from their misapprehensions of the language addressed to them.

Even physically the effects of deafness are soon apparent. The countenance assumes an anxious, strained and nervous expression. The inability of many of the deaf to hear their

own voice, prevents them from giving it the proper pitch, and they either talk in a loud and bellowing tone or in the merest whisper, while the voice itself loses its melodious quality, and assumes a peculiarly harsh and nasal character.

THE EAR.

THE Ear is the organ of hearing. Its diseased condition produces the misfortune which I have endeavored to portray in the preceding chapters. Before describing the diseases which may result in a partial or total loss of hearing, it is necessary to acquaint the reader with the anatomy of this organ, and the functions of its component parts.

ANATOMY OF THE EAR.

The Ear is divided into three parts: the External Ear, the Middle Ear or Tympanum, and

the Inner Ear or Labyrinth, so called from its intricate construction.

THE EXTERNAL EAR.

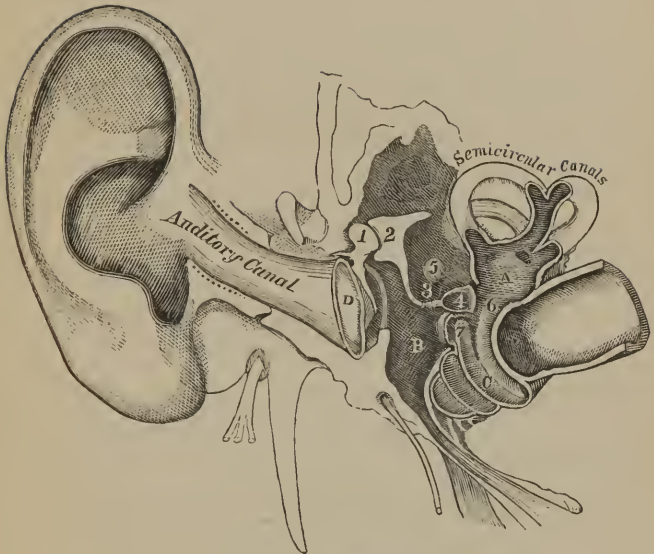
The External Ear consists of the Auricle and the External Canal. The Auricle is a cartilaginous projection, with a great many depressions and elevations. Its size, shape and angle of attachment, varies in different races as well as in different individuals; from it the canal extends inward.

The Canal is a tortuous irregularly curved tube of various calibre, and from an inch and a quarter to an inch and a half in length.

In the integument which lines it are imbedded a number of glands, which secrete the ear-wax.

THE DRUM-HEAD.

Over the internal end of the Canal and hermetically closing it, is stretched the *Membrana Tympani*, or drum-head. In infancy it is of a



ANATOMY OF THE EAR.

- A. Vestibule.
- B. Tympanum or Drum, at the bottom of which is the aperture of the Eustachian Tube.
- C. Cochlea.
- D. Membrana Tympani or Drum-head.
- 1. Hammer.
- 2. Anvil.
- 3. Orbicular Bone.
- 4. Stirrup.
- 5. Muscle of the Stirrup.
- 6. Fenestra Ovalis.
- 7. Fenestra Rotundum.

pearly-grey color and semi-transparent ; in after-life however, it becomes nearly transparent and then it receives its color from the structure behind it. It is very delicate, being not thicker than very fine writing-paper, and is set in a bony ring similar to the manner in which a watch-crystal is set in its case.

THE MIDDLE EAR.

The Middle Ear, called the Tympanum* or Drum, is a small irregular cavity, from three-eighths to half an inch in its greatest diameter. It is bounded externally by the Drum-head and internally by the Labyrinth or Inner Ear.

THE OSSICLES, OR SMALL BONES.

A small chain of four extremely delicate bones, one end of which is firmly attached to the Mem-

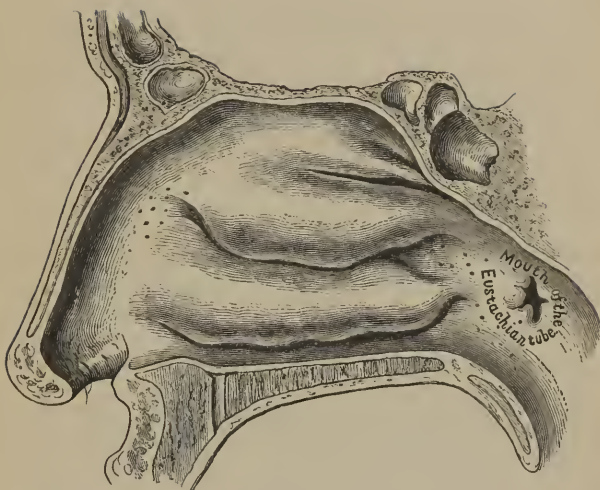
* The reader must bear in mind the difference between the Tympanum or Drum, and the Membrana Tympani or Drum-head.

brana Tympani, and the other to a membrane covering a cavity of the Inner Ear, stretches across the Drum.

The first of these bones is called Malleus or Hammer, the second Incus or Anvil, the third Os Orbiculare or round bone, and the fourth Stapes or Stirrup. They are named so from their fancied resemblance to these several articles. The Hammer is attached to the Drum-head, and the Stirrup to the membrane of the Inner Ear. A small muscle is attached to the Hammer and another to the Stirrup.

THE EUSTACHIAN TUBE.

At the floor of the Drum is the aperture of a passage called the Eustachian Tube, which opens into the upper part of the throat behind the Posterior Nares, (or inner opening of the nostrils,) as the accompanying illustration will exemplify. The length of this tube is about an inch and a half; the opening in the throat is the largest, being something like half an inch in diameter. As it approaches the ear it grows narrower but widens again at the entrance, so that the whole



VERTICAL SECTION OF THE NASAL CAVITY, SHOWING THE MOUTH
OF THE EUSTACHIAN TUBE.

tube resembles a trumpet, with its mouthpiece in the Drum.

The mucous membrane of the throat is extended through the Eustachian Tube to the Drum, lines that cavity and covers the small bones.

THE INNER EAR.

The Inner Ear or Labyrinth is wedged into the petrous portion of the temporal bone—the hard-

est bone of the cranium. It is divided in the bony and membranaceous Labyrinth. The bony one is divided into three parts, the Vestibule, the Semi-circular Canals, and Cochlea.

The Vestibule is a small irregular chamber about one-sixth of an inch in its longest diameter, having two small openings into the Drum, each covered by a delicate membrane; these openings are called the *Fenestra Ovalis* and *Fenestra Rotundum*, or the oval and round windows; to the membrane of the former the Stirrup is attached.

The inner wall of the Vestibule consists of a sieve-like plate, through which pass the filaments of the Auditory Nerve together with some blood-vessels.

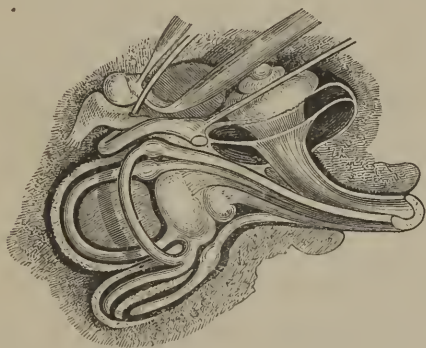
The semi-circular canals are three small bony passages, two of which open into the Vestibule at both extremities, while the third opens into but one common passage, thus making five openings into the Vestibule.

The Cochlea lies contiguous to the Vestibule, and rather in front of the Drum. In shape it resembles a snail-shell, hence its name. It is a conical canal about an inch and a half long, making two and a half turns around a central axis called the Modiolus.

Around this axis a thin plate of bone winds like the thread of a screw; the passage is divided into two Scala, one of which opens into the Vestibule and the other into the Drum by the Fenestra Rotundum.

The whole of the bony Labyrinth is lined by a thin serous membrane which secretes a fluid called perilymph.

The bony Labyrinth contains a membranaceous one, which consequently is its exact counterpart in form, but being smaller than that, the space intervening is filled with the perilymph before



GENERAL DISTRIBUTION OF THE AUDITORY NERVE.

alluded to. The Auditory nerve divides itself into two branches, one of which enters the Cochlea, the

other the Vestibule and semi-circular canals, and is distributed over the membranaceous labyrinth, terminating in very minute and highly delicate filaments.

ACOUSTICS.

THE vibrations of sonorous bodies give a tremulous or undulatory motion to the air by which they are surrounded, similar to the motion communicated to smooth water when a stone is thrown into it. These undulations reaching the ear, produce a sensation called sound.

Sonorous bodies are those which produce clear, distinct, regular and durable sounds, such as a bell, a drum, musical strings or wind instruments. Although they owe their sonorous property to their elasticity, it is not to be inferred that all elastic bodies are sonorous.

When the air surrounding a sonorous body is dense, sounds are louder than when it is in a rarefied state, and generally the intensity of sound

increases with the density of the medium by which it is propagated. For this reason the sound of a bell is louder in cold, than in warm weather, and sound of any kind is transmitted to a greater distance in cold clear weather than in a warm sultry day. On the top of high mountains, where the air is in a rarefied condition, the human voice can be heard only at the distance of a few rods, and the firing of a gun produces a sound scarcely louder than the cracking of a whip.

When the air is humid it is a better conductor of sound than when it is dry. On this account a bell can be more distinctly heard just before rain, and sound is heard better in the night than in the day, because the air is generally damper.

A clear and frosty atmosphere is also favorable to the transmission of sound, especially when the surface over which it passes is smooth and level. Conversation in the polar regions has been carried on between persons more than a mile apart.

The vibrations of sonorous bodies can be communicated to a distance not only through the air, but also through liquids and solid bodies. Through the latter medium it is communicated more rapidly and with greater power than through

the air or fluids. By water it is conducted about four times quicker than by air, and by solids about twice as rapidly as by water.

If a person lay his head on a long piece of timber, he can hear the scratch of a pin at the other end, while it could not be heard through the air. If the Ear be placed against a long, dry brick wall, and a person strike it once with a hammer, the sound will be heard *twice*, because the wall will convey it with greater rapidity than the air, though each will bring it to the ear.

The earth is also a good conductor of sound ; hence we find the Indian, Arab, or other nomad, when they wish to ascertain the proximity of friend or foe, will lay their ear close to the ground, and by long practice can tell almost to a certainty, at what distance from them an object of friendship or suspicion may be.

Sound passing through the air moves at the rate of 1120 feet in a second of time ; and this rule applies to all kinds of sound, whether loud or low. The softest whisper flies as fast as the loudest thunder ; were it not for this uniform velocity, the music of a choir or of an orchestra at a short distance, would be but a strange confusion of discordant sounds ; for the different instruments or

voices, having different degrees of loudness, could not simultaneously reach the ear.

Sounds may be conveyed to a much greater distance through continuous tubes than through the open air, as illustrated by the Acoustic Tubes used in public-houses, stores, counting-rooms, &c., to convey communications from one room to another.

Sound as well as light is reflected, its reflection being equal to its angle of incidence. After being reflected from several surfaces it may be collected into one point as a focus, where it will be more audible than in any other part. On this principle whispering-galleries may be constructed.

The famous whispering-gallery in the dome of St. Paul's Church, in London, is constructed on this principle. Persons at very remote parts of the building can carry on a conversation in a soft whisper which will be distinctly audible to one another, while others in the building cannot hear it; even the ticking of a watch may be heard from side to side.

A church in Newburyport, Massachusetts, has the same property as a whispering-gallery, as was accidentally discovered. Persons in opposite corners of the building, by facing the wall, may

carry on a conversation in the softest whisper, unnoticed by others in any other part of the building.

An echo is produced by the vibrations of the air meeting a hard and regular surface, such as a wall, a rock, a mountain, and being reflected back to the Ear, produces the same sound a second, and sometimes a third and fourth time.

The quality of sound is affected by the furniture of a room, particularly the softer kinds, such as curtains, carpets, &c. ; because, having little elasticity, they present surfaces unfavorable to vibrations.

For this reason, music always sounds better in rooms with bare walls, without carpets and without curtains. For the same reason, a crowded audience increases the difficulty of speaking.

As a general rule it may be stated, that plain and smooth surfaces reflect sound without dispersing it ; convex surfaces disperse it, and concave surfaces collect it.

The sound of the human voice is produced by the vibration of two delicate membranes, situated at the top of the windpipe, between which the air from the lungs passes.

THE PHYSIOLOGY OF THE EAR.

THE Auricle collects sound, an office which it is eminently fitted for on account of its size and elasticity, and from its being detached from the head and directed forward. The sound thus collected passes into the Auditory Canal, where it is not only intensified by the air existing there, but also by being reflected from its walls, and is brought to a focus or concentrating point upon the Membrana Tympani. There it produces the same phenomenon which the bow produces on the strings of a violin, *i. e.*, vibration. The vibration thus produced, no matter how delicate it may be, is conveyed by the agency of the chain of small bones to the membrane of the Vestibule. As one end of this

chain is attached to the Membrana Tympani, and the other end to the membrane of the vestibule, vibration of one membrane must produce a corresponding effect on the other.

Although one solid little bone would answer to convey vibrations from one membrane to the other, yet it is entirely owing to the mobility of this chain of bones, that we are enabled to hear the human voice in conversation, when the various modulations produce so many different vibrations in the most rapid succession.

Through the Eustachian tube air is admitted to the Tympanum, so as to produce an equilibrium with the air in the External Canal, and permit the Drum-head to freely vibrate. Without this presence of air in the drum, perfect vibration of its membrane would be impossible. The functions of the Eustachian tube may therefore be compared to those of the sidehole in an ordinary drum.

The vibration of the Drum-head causes the air in the drum to vibrate also, and this in turn produces a corresponding effect on the membrane of the Fenestra Rotunda, the opening of which communicates with the Cochlea. The function performed by the chain of small bones in communi-

eating vibrations of the *Membrana Tympani* to the membrane of the *Fenestra Ovalis*, is performed by the air, in communicating them to the membrane of the *Fenestra Rotunda*.

The vibration of these two membranes produces an agitation of the liquid called perilymph, which fills the intervening space between the membranaceous labyrinth and its bony case, and this agitation is felt or taken hold of, by the filaments of the Auditory Nerve, which are so delicately distributed over the membrane of the Labyrinth, and therefore come in direct contact with this liquid. The impression thus received is conveyed by the Auditory Nerve to the brain, which conceives this impression as sound.

The earwax secreted by the glands in the External Canal serves as a protection against cold, and the entrance of foreign bodies or insects. The two little muscles, one of which is attached to the Hammer and the other to the Stirrup, protect the Auditory Nerve from being stunned by the too powerful and injurious impressions it would receive from very loud reports, as by their action the *Membrana Tympani* is put on a greater stretch.

Acoustics teaches us that the more membranes

are stretched, the less are they able to vibrate, a fact easily demonstrated by a common drum. The office of the muscles is therefore to modify sound, and prevent as much as possible the sensation of stunning, an office somewhat analogous to that of the *Iris*, which contracts in strong light, and prevents the eye from being dazzled.

THE CAUSES OF DEAFNESS.

DISEASES OF THE EAR.

THE causes of deafness, physiologically considered, may be enumerated under the following heads :

1st. *Closure, either partial or total, of the External Canal, so as to prevent the vibrations of the air from reaching the Membrana Tympani.*

2d. *Impaired vibratility of that membrane.*

3d. *Interrupted or imperfect communication of the vibrations to the inner ear.*

4th. *Closure of the Eustachian tube, which prevents the air from reaching the Tympanum.*

5th. *Inability of the branches of the Auditory nerve in the labyrinth to receive impressions, or*

*of the nerve itself to convey them to the brain ;
and*

6th. *Inability of the brain to conceive the impression, as sound.*

All the conditions above mentioned, with the exception of the last, (which depends on a diseased condition of the brain itself,) may be produced by diseases of the Ear, of the more important of which we shall give a brief description.

THE INCITING CAUSES OF DISEASES OF THE EAR.

Cold.

Cold stands preëminent as an agent productive of diseases of the Ear. Its action is very depressing ; under its influence sensibility is diminished, the secretions are checked, the circulation of the blood in the capillaries is impaired, the tissues shrink, and the part affected becomes either pale from the want of blood, or purple from its stagnation.

If the reaction consequent upon this depression is carried to excess, there will be increased

heat, accelerated circulation, redness, pain and swelling ; symptoms which constitute the morbid condition called inflammation.

The more an organ is surrounded by cellular tissue and adipose matter, (or fat,) and the more plentiful is its supply of blood, the more it is able to resist the action of cold. The Ear is wholly deprived of these natural protections. Being surrounded by nothing but bone, its circulation is but feeble, its temperature easily lowered, and the reaction consequent upon depression is generally productive of inflammation.

Draughts of Air

increase very much the effect of cold, and are therefore highly injurious to the Ears.

If the surrounding air is at rest, the body cools slowly, but when it is in motion a fresh portion of the atmosphere takes constantly the place of that which has been warmed by the surface of the body, and thereby increases the rapidity with which its heat is extracted.

Cold not only affects us through the atmosphere, but also through the instrumentality of water. Therefore a considerable number of diseases of the Ear are produced by

Bathing,

especially if the water is allowed to enter the Ears. The shower bath, cold ablutions of the head, or cold applications dropped into the Ears are apt to affect them unfavorably.

Violence to the Ears,

such as boxing or pulling them, the practice of digging into them with Earspoons, the sting of insects, or the introduction into it of acrid substances, is frequently the cause of inflammation.

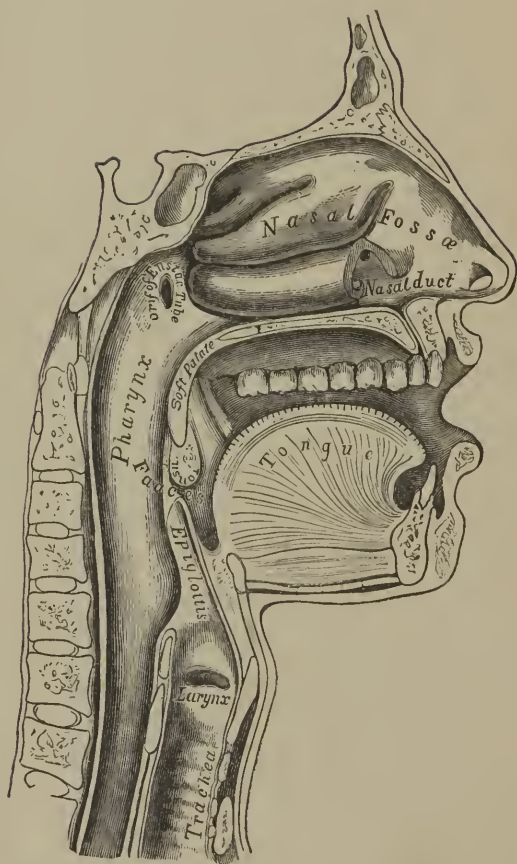
Loud Reports,

such as those emanating from the discharge of guns or the shrill whistle of the locomotive, are very injurious to the nervous apparatus of the Ear. Gunners and people engaged in machine shops or iron mills, where the ponderous steam-trip-hammers produce so great a concussion, are always affected with nervous deafness to a greater or less degree. Rupture of the drum-head was formerly considered the greatest and most frequent danger resulting from this cause, but this has been disproved by experience. Among those whose hearing becomes impaired from it, we find

probably one person with a ruptured drum-head, to fifty where it is in a perfectly normal condition. The powerful concussion of air produced by heavy reports causes a sudden and violent pressure on the Drum-head. This membrane owing to its elasticity yields, but drives the stirrup (the bone attached to the fenestra ovalis) too far into the Labyrinth, causing too great an agitation of its liquid, and thus unduly excites the Auditory nerve. Owing to this effect the diver, while working in his apparatus under water, frequently experiences a feeling of pain in the Ears and dizziness, because the compressed air in the apparatus being denser than the air in the Tympanum, rushes into the External Canal to restore the equilibrium, and produces the phenomenon just described.

Throat-Affections.

Throat-Affections are the most fruitful sources of diseases of the Ear. They propagate themselves through the Eustachian tube by reason of the continuity of the mucous membrane of the throat with that of the Middle Ear. As this membrane becomes frequently diseased and plays quite an important part in affections of the Ear, a short description of it will be found useful.



SECTIONAL VIEW OF THE NOSE, MOUTH, PHARYNX, ETC.

Description of the Mucous Membrane.

The gastro-pulmonary-mucous membrane lines the whole interior of the body, just as the skin covers the exterior. It commences at the edges of the lips and nostrils, proceeds through the nose and mouth to the throat, from whence it extends upward to line the Eustachian Tube and Middle Ear, (as already explained in the anatomy of the ear,) and proceeds downward to line the windpipe and its various divisions, as far as the air cells of the lungs. It is continued throughout the whole length of the Alimentary Canal and the Urinary apparatus to their several terminations. From the nose the membrane extends through the tear-passage until, under the name of Conjunctiva, it spreads over the eye-lids and fore part of the eye-balls. Other offsets line the frontal, maxillary, ethmoidal, and sphenoidal sinuses, (small cavities situated in the bones bearing the same names.)

The mucous membrane is of a pinkish hue, plentifully supplied with bloodvessels, nerves and lymphatics, and in its healthy state is kept continually moist by a peculiarly tough, whitish, and semi-transparent secretion called mucous.

Inflammation produces a thickening of this

membrane, of which we become easily aware by the difficulty experienced in breathing during an attack of cold, this difficulty being produced by the thickened state of the mucous membrane of the nose. In the first stages of inflammation the secretion of mucus is suspended and a peculiar dryness and irritation is the result, but soon the inflamed membrane begins to pour out a fluid, viscid, opaque, and resembling the white of an egg, thus vastly differing from its usual secretion.

Taking into consideration the continuity of the mucous membrane, it will be readily comprehended how a disease of one part can be communicated to another and even distant part, and this is the reason why affections of the throat so easily produce similar affections in the Ear.

Scarlet Fever.

Throat-Affections, of whatever character, may easily extend themselves to the Ear, but the inflammation of the throat occurring during an attack of Scarlet fever, is the most destructive to that organ, and is the cause of at least one-third of the cases of deafness.

Influenza,

or the inflammation of the mucous membrane of the throat produced by cold, is fully as apt as Scarlet fever to excite diseases of the Ear, only in a less violent degree. Most every one has experienced a little dulness of hearing during a heavy cold, this being caused either by the tumefaction of the membrane round the mouth of the Eustachian tube, or by the accumulation of hardened mucus-purulent matter in the fauces. If resulting from the latter cause, the dulness of hearing is only temporary and will disappear when the cold passes off. Should the inflammation attack the Eustachian tubes, and extend itself to the Middle Ear, permanent deafness may be the result.

Catarrh.

Catarrh is a chronic inflammation of the mucous membrane of the nose, attended by a profuse fetid discharge, which is thrown off through the nose or dropped into the throat and then hawked up. It impairs hearing in the same manner as diseases of the throat impair it, *i. e.*, by extending itself through the Eustachian tube to the Middle Ear. This disease prevails quite

extensively, and is frequently productive of deafness.

Diphtheria.

Diphtheria is a certain form of malignant sore throat, which has made its appearance in this country within the past three years to a considerable extent, and proves very fatal to hearing.

Diseases of the Skin.

The skin is extended into, and lines the Auditory Canal, and by this channel its various diseases are apt to be communicated to the ear. Measles, Small-pox, Erysipelas, &c., inflame frequently the External Canal and Drum-head.

Typhoid Fever.

Typhoid Fever is very apt to affect the Ear, and produces in some instances total deafness; Mumps and Whooping-cough have also at times a very unfavorable effect on the Ear.

Diseases of the Brain.

The Ear being intimately connected with the brain by its nervous apparatus, very often suffers from the effects of diseases of that organ. Con-

cussion of the brain, produced by falls, or blows upon the head, brain fever, congestion of the brain or softening of it, frequently produce deafness.

Quinine,

when taken for a lengthy period, may prove injurious to the Ears, and produce deafness in some constitutions. In warm and tropical climates, where this drug is extensively used as a remedy against the prevailing fevers, a great many persons may be found, whose hearing has become impaired through its use.

DISEASES OF THE EXTERNAL EAR.

INFLAMMATION OF THE AURICLE.

INFLAMMATION of this part of the Ear is generally attended to with more promptitude than that of any other part, not only because the pain attracts the patient's attention, but also because the change produced by the inflammation is easily recognized, and likely to be perceived at a glance, by any casual observer.

If the disease is confined to the Auricle, it does not produce deafness, but as it can readily be communicated to the Auditory Canal and from thence to the more important parts of the Ear, the subject deserves consideration.

Its Acute Form

is generally ushered in with headache, loss of appetite, and more or less fever. The Ear looks red, and is swollen sometimes to such an extent as to obliterate its depressions and elevations entirely; it feels hot, painful, itches, and is very sore to the touch or upon the slightest pressure. After a day or two, little vesicles or blisters appear on the surface, which burst and discharge a yellow matter or clear liquid; after which scabs are formed, the Ear begins to feel easier, and is disposed to heal.

Its Chronic Form

is attended with the same symptoms as the acute, (of which it is often the sequel,) only they appear in a much milder degree. The pain is very moderate, sometimes entirely absent; but the itching is usually very distressing. The Ear looks red, a little swollen, and is in some cases covered with scabs and little blisters which discharge a little matter, or may be affected with fissures or cracks which are very painful, itching, burning, and easily disposed to bleed.

Causes.—Exposure to cold, the direct action

of the sun's rays during hot weather, violent blows on the Ear, diseases of the skin, the sting of insects, and at times, the semi-barbarous practice of piercing the lobes.

INFLAMMATION OF THE AUDITORY CANAL.

Inflammation of the External Canal is a frequent disease. Its lining is very delicate and plentifully supplied with nerves and blood-vessels, and coming in direct contact with the atmosphere is subject to the adverse influences of its different changes and impurities.

Its Acute Form

commences, like all acute cases of inflammation, with feverishness, headache, &c. ; the hearing is dull, a feeling of heaviness, tension, or pain in the Ear is experienced, the pain being usually aggravated toward night, sometimes to an intolerable degree ; the secretion of wax is suspended, the lining membrane looks red, and is swollen occa-

sionally to such an extent that not even a probe, larger than a common pin, can be introduced. Moving the jaws or pressure in front of the Ears is very painful, a great deal of itching is experienced, and a rumbling noise in the Ears annoys the patient. Soon a discharge of pus streaked with blood makes its appearance, the swelling and redness diminish, and the pain abates in violence.

Its Chronic Form.

In its Chronic form the symptoms are the same as in the acute, but in a less violent degree. In some cases the symptoms are so mild that no disease is suspected until a slight discharge is noticed; most generally, however, there is a little pain and considerable itching. The lining looks red and is slightly swollen, and a discharge will sooner or later appear.

Causes.—Besides the general causes mentioned under the proper head,—Cold, the entrance of water while bathing, cold or irritating applications, the entrance of insects, or the use of Ear-spoons.

Effects.—If inflamed for some time, the lining membrane loses its delicacy, becomes thickened

and granulated, the granulations becoming so large in some cases as to completely block up the Canal. The inflammation gives also rise occasionally to the growth of

Polypus,

or little tumors of a soft, spongy structure, attached to the lining by a stem, bleeding easily and freely, and frequently growing so large as to completely obstruct the Auditory Canal and even to protrude into the Auricle, when they can be seen in the shape of a little bag; generally however they extend inward, and by pressing on the Drum-head produce disagreeable noises. They irritate the lining of the Canal, increase the inflammation and discharge, and are a perpetual source of danger and annoyance.

INFLAMMATION OF THE CERUMINOUS GLANDS.

The glandular bodies which secrete the Ear-wax are involved in all the diseases of the lining of the Auditory Canal. As already observed,

their secretion is suspended upon the appearance of inflammation, whether acute or chronic, of the External Canal, but they sometimes become more specially affected. After bathing, exposure to cold or draughts of air, or through the effect of the sudden repression of perspiration, they become inflamed and secrete too large a quantity of wax, which then blocks up the Canal. Owing to the increased heat attendant upon inflammation, the watery part of the wax evaporates, leaving in the Canal the dry residuum known as

Hardened Ear-Wax.

If allowed to remain for some length of time, the wax thus impacted will sometimes become nearly as hard as stone. Some persons, ignorant of the causes which produce this superabundance of wax, ascribe it to a want of cleanliness; but this is a great mistake.

While in a healthy condition, the Glands never secrete more wax than is required for the purposes of protection, and only when diseased, do they secrete too great a quantity. Ear-wax can never be *washed out of the Ear*, as no towel or sponge can, or should be, introduced far enough into the Ear to reach it.

Although, in general, the presence of impacted wax can easily be seen by an examination, yet owing to the smooth and shiny appearance which it occasionally assumes, it has in some cases been mistaken for the Drum-head, even by experienced physicians. To be able to detect its presence, requires in many cases a keen practical eye, as well as a careful examination. The following case will serve as an illustration.

An English gentleman, sixty years of age, consulted us in 1857 in regard to his deafness. He had been affected five years, could not hear the ticking of a watch when placed on the bone back of the Ear, and could hear it but faintly when pressed upon the Auricle. He had to be very loudly spoken to, complained of constant noise and of occasional darting pain in the head, and had been examined by two Aurists of great repute in England, personally known to us, and by one physician of considerable celebrity in this country, who united in pronouncing his case to be one of nervous deafness, and incurable.

Upon a close examination we discovered what appeared to be impacted wax, but the opinion expressed by our predecessors caused us to doubt the evidence of our senses, until a still more crit-

ical examination fully assured us of its presence. In a few days the old gentleman, to his intense delight, was restored to good hearing, the chronic inflammation produced by the wax was removed by a few weeks' treatment, and the cure completed.

Effects.—The hardened wax presses upon the lining of the Auditory Canal, causing that to become irritated and inflamed; if pressing on the Drum-head, it produces inflammation and even ulceration of that membrane; noises in the Ear, headache, neuralgic pain in the face, and dizziness are apt to arise from this cause.

Treatment.—Impaction of wax is one of the difficulties, for the removal of which the syringe can be made useful. Sweet oil will soften the wax, and some injections of warm water will do the rest. Even the simple operation of syringing must be well understood to make it effectual, or in spite of the most frequent applications, the Ear-wax may remain, as will be seen by the following case.

A merchant of this city applied to us, complaining of complete deafness in one Ear, together with noises so disagreeable and incessant, that he was fearful of becoming insane from their effects.

He begged of us to try and remove the noises, even if hearing could not be benefited, and stated that he had been under the care of three physicians, and that his Ear had been syringed by their directions for more than two months, without any benefit whatever.

An examination of the Ear revealed, to our great surprise, the presence of impacted wax; when stating this fact to him he could scarcely believe it, as he thought the injections would certainly have removed any wax which might have been there. In twenty-four hours from the time he applied to us, the wax was not only removed and the annoying noises stopped, but the hearing completely restored.

The operation of syringing has to be done *properly* and *carefully*. While syringing the Ear, it should be frequently examined, and the operation suspended as soon as the wax is removed, otherwise, the water thrown forcibly on the very delicate and already irritated Drum-head might have a very injurious effect.

After the wax is removed, the Ear should be subjected to appropriate treatment, lest the difficulty might not only speedily return, but the irritation of the lining membrane of the Auditory

Canal be productive of serious consequences to hearing.

EFFECTS ON HEARING.

Inflammation of the Auditory Canal gives rise to granulations, polypoid tumors, and impacted wax, which, obstructing that tube, prevent the vibrations of air from reaching the Membrana Tympani.

INFLAMMATION OF THE MEMBRANA TYMPANI.

The Drum-head being covered on its external surface by a continuation of the lining of the Auditory Canal, and on its internal surface by the delicate mucous membrane of the Middle Ear, generally participates in the various affections of these parts; occasionally however it becomes inflamed itself, and then in turn extends the disease to the parts mentioned.

Its Acute Form

commences with deep-seated pain in the Ear, either darting or throbbing, which is in some cases very severe, and is accompanied with dulness of hearing, noises in the ear, and by all the symptoms attendant upon inflammation, such as headache, fever, &c. In

Its Chronic Form

these symptoms are very often absent, except the dulness of hearing ; upon examination we frequently find the Drum-head considerably inflamed, without any pain having been experienced.

The exciting causes are the same as those which produce diseases of the External Canal ; draughts of air, however, are most injurious to the Membrana Tympani.

Its Effects on Hearing.

Inflammation produces thickening of the Drum-head, ulceration, and ultimate perforation.

The ulceration may proceed to such an extent

as to involve the loss of the entire membrane. Deafness in such cases arises either from the impaired vibratility of the Membrana Tympani; or, if the entire membrane is destroyed, from imperfect communication of the vibrations of the air to the Labyrinth.

DISEASES OF THE MIDDLE EAR.

INFLAMMATION OF THE EUSTACHIAN TUBE.

THROAT-AFFECTIONS are very apt to involve the Eustachian Tubes, and by extending themselves further on, affect the Middle Ear. In rare instances the Tubes become affected through diseases of the External Ear extending themselves to the Tympanum, and affecting the Tubes from above downward.

Symptoms.—During a heavy cold the hearing is more or less impaired, and sometimes feels quite stopped up, when all at once, during the act of blowing the nose, sneezing, or coughing, something snaps in the Ear, and hearing is restored. This symptom may be repeated for years, the hearing being good whenever the throat is in a

healthy condition, but quite bad as soon as it is in the least inflamed, until finally, hearing will become permanently injured.

Deafness arises in such cases either from partial obstruction or entire closure of the Eustachian Tube, (produced by the thickened state of the Mucous Membrane, or by the scars resulting from ulceration,) preventing the air from reaching the Drum. The sudden loss of hearing during active inflammation, and the subsequent equally sudden restoration, is caused by a small particle of hardened mucous, temporarily obstructing the Tube, which, by the muscular effort made by coughing, sneezing, &c., is dislodged, when the air, rushing suddenly in, produces the snapping and restores hearing.

INFLAMMATION OF THE TYM- PANUM.

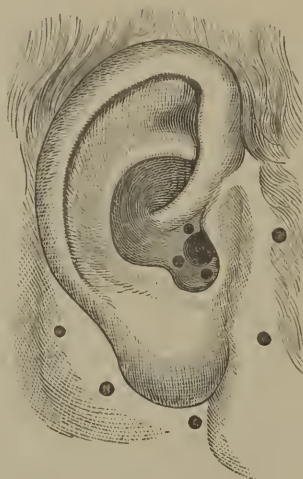
INFLAMMATION of the Drum is frequently excited by affections of the throat, which reach it through the Eustachian Tubes, or by diseases of the External Ear, which extend themselves through the Membrana Tympani. The functions of the Middle Ear are so important and the several parts so delicately constructed, that their slightest abnormal condition prevents good hearing, and diseases of this part of the Ear are the most frequent cause of deafness.

Its Acute Form

commences with feverishness, headache, loss of appetite and an excruciating pain in the ear, known under the name of ear-ache, which rises at

times to such a pitch as to produce delirium. In more or less time from the commencement of the disease, and during a paroxysm of pain, something is felt giving way in the Ear, and a discharge of matter makes its appearance, after which the symptoms become milder. In some cases the inflammation attacks the brain, and death may be the consequence. The hearing, very soon after the appearance of the inflammation, becomes greatly impaired, and is sometimes entirely lost. Although this disease is liable to occur in individuals of every age, children are the most frequently attacked by it. No time should be wasted in procuring medical assistance, and if that cannot be obtained as soon as the urgency of the case requires, let the following treatment be at once commenced :

Let the bowels be well moved by an active cathartic, such as Salts and Senna or Castor-oil, and apply from two to four leeches around the edges of the External Canal, or from six to eight around the Ear. The black spots in the accompanying illustration will show, how they can be applied to the best advantage. The application to the edges of the canal is preferable, but before applying them to that part, a little cotton should



be put into the Ear, to prevent the leeches from crawling in too far, or the blood from running into it. Should it be impossible to procure leeches, let the Ear be kept warm by warm bread-and-milk poultices, or by directing into the Ear the steam arising from the following mixture :

Laudanum	. . .	1 ounce,
Tincture of Belladonna,	. . .	1 ounce,
Water,	$\frac{1}{2}$ pint, mix.

The best way to apply this, is by heating the mixture in a small tea-kettle, and then direct-

ing the steam issuing from the spout, into the Ear, taking care however not to have the steam so hot as to scald.

In case the medicines above named cannot be procured, the steam of water even will be found very beneficial. The reader must not imagine that the treatment recommended here is all that is required ; the advice is offered to allay the most distressing symptoms, and only until the services of a physician can be procured. The practice of pouring laudanum or of putting salt pork into the Ear as remedies for Ear-ache, is very injurious and should be abandoned.

Its Chronic Form.

The chronic inflammation of the Middle Ear is by far the most frequent and the most dangerous disease of the ear, because it commences generally without any symptoms likely to attract attention until the hearing becomes so defective as to cause considerable inconvenience. Occasionally there is slight pain or a feeling of heaviness in the Ears together with noises, but in the majority of cases even these symptoms, with the exception of the noises, are absent. Persons laboring under this affection are scarcely if ever able to tell, when or

how it commenced, and only recollect that they first noticed a slight defect in hearing after a severe cold, on having their attention drawn to this circumstance. The following is the usual statement obtained from that class of patients, and will serve to illustrate the symptoms :

During a heavy cold a slight pain was experienced in the Ear, especially when moving the jaws, and the hearing was a little thick or even considerably impaired, when during the act of sneezing or coughing, a crackling sound or a sharp report was heard in the Ear, sometimes loud enough to startle them, which was immediately followed by a return of hearing.

This state of things was considered a natural consequence of a cold, and nothing was thought of it, until becoming thus affected at every subsequent cold and upon the slightest exposure, they at last find their hearing to have become so much impaired, as to oblige them to seek relief.

Causes.—Scarlet Fever is usually the exciting cause of the acute inflammation, and the common sore throat or catarrh, the exciting cause of the chronic one. Both forms may be excited however, by all those causes operating unfavorably on the Ear, such as cold, acrid applications, &c., &c.

Its Effects on Hearing.

Inflammation of the Tympanum, by producing a thickened state of the mucous membrane, diminishes the size of that chamber, which in its normal state is not larger than a coffee-bean. The quantity of air necessary to the vibration of the Drum-head and for the communication of the vibrations to the *Fenestra Rotunda* is correspondingly reduced in quantity. The peculiar secretion thrown out so abundantly by the diseased mucous membrane, tends still further to diminish the size of the Drum, and to exclude a still further portion of the necessary air.

The small bones of the Ear being covered by the mucous membrane, are, by its thickened condition, as well as by the diminution of the size of the Drum, prevented from acting with that freedom and precision, necessary for so delicate a mechanism. Bands of adhesion (similar to the false membranes produced by croup) are sometimes formed by the inflammation between these little bones and the walls of the drum, and their action becomes still further impeded.

Deafness then, in such cases, is owing to the

imperfect or interrupted communication of the vibrations of the Drum-head to the Labyrinth.

NERVOUS DEAFNESS,

or deafness arising from diseases of the Nervous Structure of the Ear, is rare; although formerly nearly every case of deafness in which no disease was observed in the External Ear, was pronounced "Nervous Deafness" for the sake of convenience. Since it has been demonstrated however, by scientific investigations, that in the majority of cases the loss of hearing results from diseases of the Middle Ear, "Nervous Deafness" has decreased wonderfully.

The Auditory Nerve like other nerves is liable to diseases, such as Atrophy or shrinking, Paralysis, &c.

Symptoms.—Loss of hearing, which in some instances takes place suddenly, and in others so gradually that its commencement or progress can scarcely be noticed. Noises of almost every imaginable character are generally present. At times there is a little darting pain through the

Ears, but usually it is absent. Symptoms of other nervous disorders are very often present, such as pains in the back of the head, neuralgic pains in the face, twitching of the muscles of the face, &c.

Causes.—Paralysis or Atrophy of the Auditory Nerve, congestion, inflammation or softening of the brain, inflammation of the Middle Ear extending to the Labyrinth, Typhoid fever, loud reports or very sharp and shrill sounds, falls or blows upon the head, and the action of quinine.

Deafness is occasionally produced by tumors in the brain, but as a matter of course the existence of such bodies can only be ascertained by a Post-Mortem examination.

OTALGIA, OR NERVOUS EAR-ACHE.

In conjunction with toothache, a very distressing pain in the Ear makes sometimes its appearance, on account of the intimate nervous connection between the Ear and Teeth. The removal of the carious tooth will cause a cessation of the ear-ache.

OTORRHŒA, OR DISCHARGE FROM THE EAR.

DISCHARGE from the Ear does not constitute a disease, but is the sequel of disease of either the External or Middle Ear. It occurs so often, is so detrimental to hearing, so pernicious to the general health, so disagreeable in its character, and so very generally neglected, that it is necessary to devote a special chapter to its consideration, in order to have its true bearing fully understood.

ITS CAUSES.

Acute or sub-acute inflammation of the Middle or External Ear, invariably terminates with dis-

charge ; but its most prolific source is Scarlet fever, this being the exciting cause in fully two-thirds of all the cases.

ITS PROGRESS.

The discharge, appearing immediately after the subsidence of an acute inflammation, is usually thin, scanty and mild in its character ; but if allowed to run into a chronic state, it becomes profuse, very acrid and irritating, assuming an odor so highly offensive that even the patient's nearest friends become disgusted with it ; very often mothers, overcome by the dreadful stench, are unable to attend to their children, keeping away from them as much as possible. Children affected with it are very often prevented from attending school, because nobody wants to sit near them, and this renders them sensitive, morose and irritable. Adults being themselves aware of the sickening smell usually shun company as much as possible, so as not to give offence.

ITS DANGER TO THE EAR.

The discharge is very acrid, its presence therefore tends to increase and extend the inflammation.

If proceeding from the Middle Ear, the Drum-head must have been perforated by the inflammation which gave rise to the discharge in the first instance; sooner or later, the Drum-head will slough off entirely, and even the small bones will, one after another, be lost. They are frequently found amongst the discharge by the patients or friends, and shown as something strange that came away from the Ear.

ITS DANGER TO LIFE.

The inflammation, fostered by the irritating discharge, is liable to extend itself through the opening of the vestibule into the Labyrinth, and, attacking the nervous structure, produce chorea or St. Vitus's dance, neuralgic pain in the face and head, dizziness, and a host of other nervous derangements. In time, it may attack the surrounding bony structure and produce caries or

ulceration. The upper wall of the Middle Ear, being very thin and delicate, when thus affected is easily eaten through, the membranes of the brain being then exposed become inflamed, as also does the brain itself, when convulsions and death will be the inevitable result. The internal carotid artery, the largest artery of the head, is in close contiguity to the Labyrinth, and should the ulcerative process attack the bony canal through which it runs, it may perforate it, and fatal hæmorrhage would ensue. All these results may occur even in cases where the discharge at first proceeded merely from the external canal, and where it existed for years, without much apparent injury; for a slight cold, or a draught of air, is liable at any moment to aggravate the existing symptoms to such an extent, as to render any of the above-named fatal issues possible. We have Life-Insurance-Companies, who understand the danger arising from this disease so well, that they either altogether refuse to insure applicants afflicted with it, or insure them at a greatly advanced rate.

We are confident that, could statistics be obtained of the average length of life of those who

suffer from this disease, startling facts would be revealed in regard to its fatality.

IRRATIONAL IDEAS CONCERNING ITS REMOVAL.

It would appear strange indeed that a disease so easily observed, and so repulsive to the senses both of smell and sight, should be so much neglected and so generally left alone, but for the fact that so many queer and unreasonable notions exist in regard to it. In the first place the supposition is, that it may get well of itself, or that in the case of children it may be outgrown; then the opinion is entertained by many, that it is altogether incurable, whilst a further and the most unreasonable supposition is, that it serves as a drain for the bad humors of the body, and its suppression might be followed by some other and more dangerous disease.

THE REFUTATION OF THESE POPULAR FALLACIES.

It is true that Nature exerts herself most generally for the restoration of health, and that a

physician has only to direct her powers judiciously, in order to effect a cure. But in diseases of the Ear, Nature does but little and leaves it in a great measure for Art to supply her place, owing to the fact already stated under the head of the causes of aural diseases, that the Ear is surrounded by bony structure only, and has but a very feeble circulation. There are but very few cases of diseases of the Ear on record, getting well of themselves, and while one mild case might do so, hundreds of others not only remain so, but grow worse. How little the power of Nature is exerted in diseases of this organ, is shown abundantly by the fact, that the powerful revolution produced in the system at the time of puberty, effects not the slightest improvement in them, although diseases of the Eye and other organs disappear under its influence, as if by magic. By entertaining the false hope of obtaining relief from nature and time, the future happiness of many a child is imperilled.

THE NECESSITY OF A SYSTEMATIC TREATMENT.

To remove discharge from the Ear requires a systematically instituted treatment, which has to

be patiently carried out, in some cases over the space of years. Physicians engaged in general practice, either disliking to treat a disease so disagreeable in its nature, or if treating it, finding their patience exhausted before much improvement is effected, are very prone to pronounce it incurable, with a desire to get rid of the patient, or because of their own limited experience in the matter. This indifference or want of success on the part of the general practitioner, has established to some extent the idea of its incurability.

We are happy to be able to disabuse our readers of so erroneous an impression, as from our own practice, we could cite many cases of discharge from the Ear of long standing and in all its progressive stages, which have been radically cured.

THE BENEFITS RESULTING FROM ITS REMOVAL.

The danger arising from the removal of discharge exists only in the imagination, but not in reality ; while the danger of its presence is a fixed and incontrovertible fact. Inflammation cannot exist long in any part of our body without

doing more or less injury ; but when it exists in an organ situated in such close proximity to the brain, and is accompanied by an acrid discharge, liable to be absorbed again into the system and create diseases elsewhere, the injury it produces must be the more certain and severe. In order to remove the discharge permanently, the inflamed surface from which it emanates must be restored to a healthy condition, and from such a course the system, instead of being injured, cannot but be benefited, and the danger of its creating other diseases averted. Instead of carrying off the bad humors of the blood, discharge detracts from the nutrition of the body, and those affected with it present generally a puny and sickly appearance.

Until competent treatment can be obtained, let the Ears be syringed out occasionally with simple warm water. The syringing should be done gently, however, lest the inflamed surface would be still more irritated, and should not be repeated oftener, than is absolutely necessary for the purposes of cleanliness. The attempt to clean the Ears with cotton is to be condemned, as it is ineffectual to remove the discharge from the bottom of the canal where its presence does the most harm, and is more irritating than the syringing.

THE CAUSES OF THE FREQUENCY OF DEAFNESS.

THE extent to which deafness prevails, in one Ear or both, from the non-appreciation of faint and low sounds to the total loss of hearing, is far greater than is generally supposed. Those whose hearing becomes impaired, are astonished at finding so many whose condition is similar to, or much worse than their own.

This is owing in a great measure to the culpable neglect of people to seek competent medical advice upon the appearance of the first symptoms of a disease in the ear, or to improper and irrational treatment. The majority of diseases of the Ear are chronic, commence very insidiously, give no pain, and impair hearing so gradually that in

the first stages their presence is scarcely if ever detected.

Deafness is hardly ever perceived or acknowledged, until great difficulty is experienced in hearing common conversation, and when it reaches this degree it is already much impaired, and the disease from which the difficulty proceeds, must have progressed to a considerable extent.

A slight defect in hearing is not likely to be noticed, because persons so affected are apt, at first, to ascribe their inability to hear common conversation readily, either to their own carelessness, or to the indistinct articulation of those with whom they converse.

Their own supposed fault, they endeavor to remedy by the most eager listening while engaged in conversation, as well as by watching the movements of the lips of the one who addresses them; who perceiving himself frequently misunderstood, will speak more distinct or raise the voice a little.

This mutual accommodation prevents, for a time, the knowledge of the real source of the difficulty. As the idea of existing deafness is a delicate matter to broach to any one, it is scarcely

ever acknowledged until it is too marked to be longer concealed.

Children are very often punished for stupidity or laziness, when their supposed inattention is in reality a disability to hear. In some cases such undeserved punishment is continued perseveringly, until by an accident the mistake is rectified, and the child's hearing will not only be found affected, but its temper as well.

PROCRASTINATION. .

But even after the fact of existing deafness is recognized, a long time is allowed to elapse, in most cases, before the physician is called on for advice.

At first, good old Dame Nature is relied on, to set all things right, but for the reasons stated under the head of Otorrhœa, she refuses to extend her beneficent influence to the organ of hearing, and hinders children in this way from outgrowing diseases of the Ear, no matter how hard and diligent they may try to do so.

Being disappointed by nature and time, home remedies are usually brought into requisition and

faithfully administered under the direction of some Sage Old Lady, who is positive that great benefit will be derived from *this herb* or *that decoction*.

Receiving no help in spite of persevering trials, nostrums well advertised, highly praised and warranted to effect a cure, are resorted to until, their inefficacy or injuriousness having been sufficiently demonstrated, the medical man is called on after much time and hearing has been lost.

EMPIRICAL TREATMENT.

The Family Physician is generally consulted first, but we are sorry to be obliged to confess, that the majority of them are not so well informed in regard to diseases of the Ear as they should be, and as the importance of this organ demands. Physicians, well-informed on any other subject, ranking deservedly high for their learning, skill, and judgment in medicine and surgery, who would not prescribe for a simple case of headache without an examination as to its cause, have not the least hesitancy to prescribe for a case of

deafness, without as much as an examination of the Ear.

Remedies are still extensively prescribed, which have been recommended and used at a time when Physiology and Pathology were in their veriest infancy ; when even the most important causes of deafness were unknown, and the External Canal seemed to have been considered specially created, as a receptacle for all kinds of liquid applications.

There are still practitioners who drop or syringe into the Ear, sweet oil, soap-suds, glycerine, as well as such acrid substances as Tincture of Cantharides or Tincture of Capsicum, without stopping to reflect whether the application ordered, is adapted for the case under consideration. Finding their efforts not followed by the much-desired success, and observing the hearing becoming worse and worse as treatment is continued, they very often come to the conclusion that deafness cannot be cured, that the Ear is too delicate an organ to be meddled with, and had better be left alone.

The public receiving so little encouragement from the profession, try to obtain help from whatever source it is promised. Quacks, Charlatans and self-styled Aurists, without any medical edu-

cation whatsoever, duly improve the opportunity. If their ever-ready promises or their glowing advertisements, would be able to effect cures, there would not be many deaf people in existence; not only do they fail, however, to perform what they promise, but they generally make the disease even worse than they find it.

Some of the applications of these medical mountebanks are of the most painful character, and produce severe injury. Two cases were brought under our notice: one of a young lady from the interior of this State, who became insane from such a severe application, and who is an inmate of a lunatic asylum up to date; and that of another lady, subjected to similar treatment, who was only saved from sharing a similar fate, by the most prompt and active treatment.

It would be unfair, indeed, if we were to include the whole medical profession in the remarks we have made, for physicians high in rank and of thorough scientific acquirements, aided by the advanced state of medical science of the present day, have used every effort to ascertain the causes which produce deafness, by dissecting the ears of those, who during life had been deaf. They brought the diseased parts under the microscope,

the magnifying power of which assisted them in the elucidation of its pathology, and they then devoted their time and attention, for the purpose of ascertaining the best means, for the successful treatment of its various diseases. By publishing the result of their patient and laborious investigations, they have aroused the interest of the profession for Aural Surgery, this highly important though hitherto much neglected branch of medical science ; and although much is still to be desired, the good fruit of their labor is already discernible, and we trust the day may not be far distant, when every medical man will be as capable to prescribe for a diseased ear as for disease of any other organ.

In order to acquire the ability to discriminate correctly between the different diseases of the ear, to detect their presence and locality readily, to select and institute for them their appropriate treatment, and to become possessed of the delicacy of touch and dexterity of hand necessary for its manipulation, a far larger number of cases is required, than ordinarily falls to the share of any general practitioner ; therefore, in all countries, some medical men having a taste and aptitude for this branch, devote their special attention to

it, and become able through their extensive experience to obtain better results.

An aurist must not only be conversant with all that appertains to the ear, but be a well-educated physician and surgeon.

THE RATIONAL TREATMENT OF DEAFNESS.

DEAFNESS being not a disease itself, but the effect of disease, can never be cured by any specific remedy, or by any one operation. A remedy which acts beneficially in one case, may produce decided injury in another, even when the symptoms in both cases, appear to the uninitiated to be identical, for the deafness may proceed from causes diametrically opposed to each other. Therefore all nostrums or single operations, advertised for the cure of deafness in all its stages and various forms, have proved and ever will prove miserable failures.

To treat deafness successfully, the treatment should be directed to the cause which produces

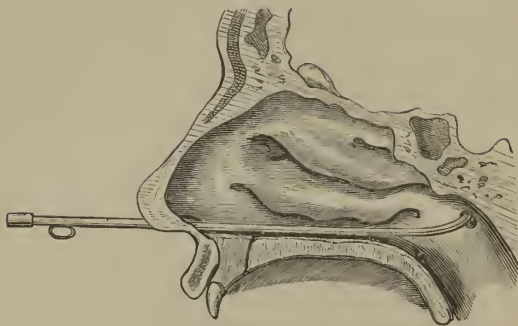
it, on the same principle on which every other disease is treated. Besides the constitutional treatment in a majority of the diseases of the Ear, we have the additional advantage of making local applications with decided benefit.

REMEDIAL AGENTS.

In cases of inflammation of the External Ear, remedial agents put into the Auditory Canal, by coming in direct contact with the diseased surface, will be found useful. In diseases of the Middle Ear, however, where the Membrana Tympani is integral, applications to the External Ear are not only of no use, but may prove injurious.

Local applications can reach the Tympanum only through the Eustachian Tube, the same channel by which diseases of the throat are communicated to that part of the Ear. These applications are made by introducing a catheter through the nose into the Eustachian Tube. The following cut will illustrate the operation.

The introduction of the catheter, formidable as it may appear, is a very simple process, and if

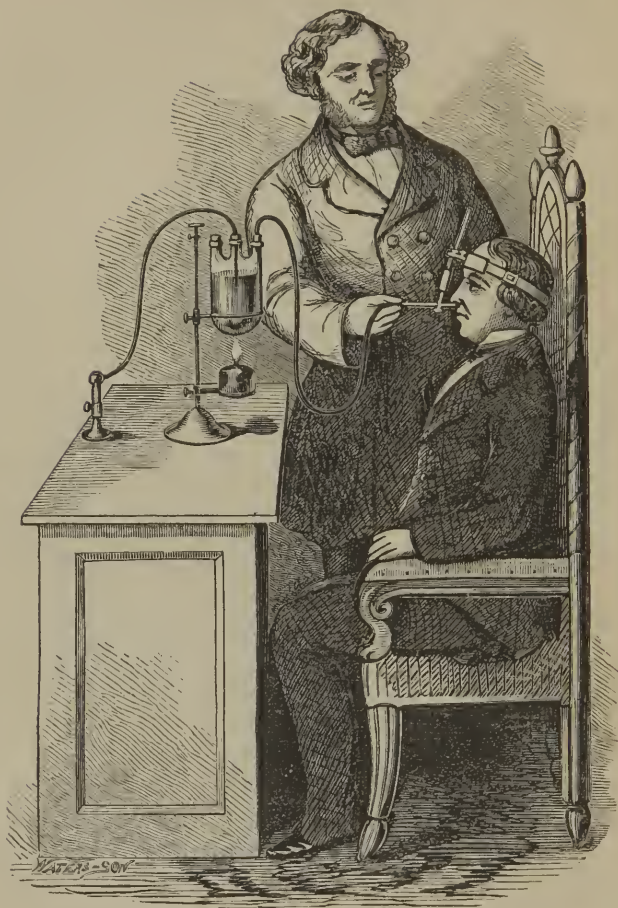


done by an experienced hand is not attended with any pain or inconvenience. Liquids, vapors, or air can thus be introduced into the Middle Ear.

In chronic diseases of the Middle Ear, compressed air and liquids of various kinds have been extensively used in this manner, but being frequently disappointed in their effects, and finding them too irritating for the delicate lining of the Middle Ear, we have adopted with the best of results

A NEW METHOD OF TREATMENT,

for this so frequent class of affections, consisting in the introduction of gases and warm vapors, impregnated with such medicinal substances as the particular case requires.



THE AUTHOR'S METHOD OF APPLYING WARM VAPORS TO THE MIDDLE EAR.

The wooden stand upon which the apparatus is placed, contains a powerful Air-Pump. The liquid contained in the bottle having been properly heated, the cold air from the pump is forced into it through the India-rubber tube. A warm vapor is thus produced which, finding no other outlet, is forced into the tube connected with the Catheter, and is thus made to enter the Middle Ear.

For this purpose we have constructed an apparatus of which the accompanying cut is a correct illustration.

These vapors come in direct contact with the diseased mucous membrane of the Eustachian Tube and Middle Ear, and bring it to a healthy condition. As the vapors are warm, they do not lower the temperature of the Ear, and consequently feel grateful to that organ. Local applications can never be exclusively relied on, however, for the cure of disease of the Ear; constitutional treatment has always to be combined with them.

To cure deafness permanently, the causes which excited the disease of the Ear must be removed. In cases where Chronic Catarrh in the head, or inflammation of the throat has been the primary cause, the mucous membrane of these organs must be brought to a healthy state, for their diseased condition would furnish a constant source for relapse.

THE CURABILITY OF DEAFNESS.

The curability of deafness does neither depend on the age of the person affected, nor on the de-

gree of deafness, but on the source from which it emanates. That deaf persons of great age, as well as those who can scarcely hear a sound, can at times be restored to good hearing, will be seen by the following case, which is only one of a great number of similar ones that have occurred in our practice.

J. Williams, an old gentleman from Sussex County, N. J., consulted us, in the summer of 1859, in regard to his case. He was so deaf that he could not understand conversation carried on in the loudest voice, even if the speaker's mouth was in contact with his ear; consequently, writing was the only medium of communication. He frankly said that he did not expect any benefit, and only came at the earnest solicitation of his friends. Discouraging as his case certainly appeared to both him and us, after a short course of treatment his hearing was restored to such a degree, as enabled him to hear common conversation with perfect facility.

A case mentioned in a recent work on the Ear by Dr. Von Tröltzsch, a German author of high repute, is also worthy of recital :

An engineer on one of the German railroads became so deaf, that he could not hear the work-

ing of the locomotive, and could hardly hear conversation in the loudest voice, even when addressed to him through an ear-trumpet. He consulted the author, and after but a few applications was enabled to hear conversation readily, without the aid of the trumpet. .

Many more cases could be cited, from our own practice and that of others similar to the preceding, but those mentioned are sufficient to show that however desperate a case may appear, there is a possibility of its being relieved, and consequently an examination should be had in all cases before hope is given up.

THE PREVENTION OF DEAFNESS.

DEAFNESS being caused in consequence of diseases of the Ear, those who value their hearing, and desire to prevent so great a calamity as to lose it or have it impaired, should be careful to maintain the health of that organ, and guard it against all influences likely to prove injurious.

The following suggestions will aid those so disposed, to accomplish this object :

CLEANLINESS.

The Ears ought to be kept in a state of cleanliness by washing them every morning. The sponge used for this purpose should be soft and

the water lukewarm, nor should any attempt be made to force the sponge into the Ear, as it might create an irritation and inflammation of the Auditory Canal.

PROTECTION AGAINST COLD.

The Ears should be well protected against cold, as its depressing influence is the cause of a large proportion of its diseases. During cold and stormy weather they ought to be covered, and for that purpose caps with ear-flaps attached should be worn. Less deafness exists among females than males, because the ears of the former are protected by hoods and bonnets, while those of the latter are usually exposed.

Draughts of air, either in the house, the sleeping apartment, the carriage or railroad car, should be carefully avoided. Nurses ought never to dress young children near an open window, or opposite a crack or opening, and if carried out in cold weather a child's ears should be well covered.

PRECAUTIONS IN BATHING.

While bathing, a little cotton, saturated with oil, should be put into the Ears, to prevent the water from running into them, especially when diving. As the pellet of cotton is liable to be washed out by the action of the water, as a further precaution an oiled silk cap should be tied over the head, to prevent such an accident.

WARNING AGAINST EAR-SPOONS.

Digging into the Ears with Ear-spoons, knitting needles, or hair pins, is not only indelicate, but very injurious, as it is very often productive of chronic inflammation of the lining of the External Canal, and should therefore be avoided. It might be supposed that the sharp and darting pain, occasionally experienced by persons indulging in this practice, would be sufficient, to warn them of the danger to which a continuation of it, would be liable to expose them ; but habit most generally overpowers prudence, and such articles

as those mentioned, are thrust into the Ear again and again, until hearing becomes impaired.

PUNISHMENT OF CHILDREN.

The practice of pulling or boxing children's Ears as a means of punishment, deserves a severe rebuke, as it might be productive of very serious consequences to hearing; cases have come under our notice where the Drum-head has been ruptured by a box on the Ear, and when diseases of the nervous structure of the Ear followed such irrational punishment.

ADVICE TO ARTILLERISTS.

The means by which the effects of loud reports can best be counteracted or lessened, is by condensing the air in the Middle Ear, so as to enable the Drum-head to protect the Auditory Nerve from receiving an injurious shock, by offering the greatest possible resistance to the pressure produced by the concussions. To accom-

plish this object, gunners have heretofore been advised to keep the mouth wide open, for the purpose of facilitating the entrance of air into the Middle Ear through the Eustachian tubes. Without the exercise of some force, however, no more than the usual quantity of air is admitted, and consequently no advantage is obtained.

The diver obtains temporary relief from the pain and dizziness he experiences while under water, by making an expiratory effort at the same time closing tightly his mouth and nostrils, thereby forcing the air from the lungs into the Tympanum. Gunners would find an imitation of this practice very serviceable while discharging heavy ordnance ; but as a row of soldiers holding their noses tightly with their fingers, would not present a very martial appearance, they should, while in the act of discharging their pieces, keep the mouth tightly closed and go through the act of swallowing, as by this manœuvre the air is driven with sufficient force into the Middle Ear, to assist the Drum-head in warding off the shock, and to lessen materially the injurious effects of the reports.

PROTECTION OF THE FEET.

The extremities should never be allowed to become cold or damp, or if so, to remain in that condition any length of time. The feet, especially, should be well protected, and during cold or wet weather good woollen socks should be worn, and the boots or shoes should have thick soles ; when the streets are covered with slush or snow, the thickest soled boots hardly suffice to keep the feet from getting damp, and as an additional precaution India-Rubber over-shoes should be worn. If the feet become damp in spite of these precautions, they should be dried and warmed at the first opportunity, and after the usual temperature has been restored, a clean, dry pair of socks should be put on.

Cold feet are the cause of many of the most prevalent and dangerous maladies, of which diseases of the Ear are but a part ; it is really sad to contemplate how many of our ladies, in order to make their feet look “ nice ” and small, wear shoes so tight as to impede the circulation of the blood, and with such thin soles, as to scarcely afford any protection whatever against the cold.

For the past year or two, however, Prudence seems to get the better of Fashion, and we are happy to observe that at the present time a majority of the American ladies are not ashamed to wear large, stout shoes, with good thick soles. This improvement in the covering of the feet will assuredly diminish, to a considerable extent, the number of invalids in the ranks of the gentle sex.

Those habitually troubled with cold feet, should bathe them several times a week in warm water, rubbing them briskly with a coarse towel until dry, or if not too delicate, they may once a day put them into cold water up to the ankles, and then rub them briskly until perfectly dry and warm.

RULES FOR THOSE PREDISPOSED TO COLDS.

Many individuals have a constitutional tendency to take cold on the slightest exposure or through the frequent changes of the atmosphere. They should endeavor to overcome it by daily sponging the neck and chest with cold water, then rubbing with a coarse towel until perfectly dry and a glow of the skin is produced. Very delicate individuals should have the water lukewarm at the commence-

ment of this prophylactic treatment, and gradually accustom themselves to using it cold, that the system may not receive too sudden a shock.

NECESSARY CAUTION DURING ATTACKS OF INFLUENZA.

Persons when affected with influenza—the disease usually called cold—should be careful of themselves, and guard against imprudent exposure, as the inflammation may extend itself to the Ear. In cases any way severe, the room, and even the bed should be kept, and a physician called. Too much caution cannot be exercised in regard to this disease, which may appear insignificant, but is capable of producing the worst consequences.

RULES TO BE OBSERVED DURING ATTACKS OF SCARLET FEVER.

Children, attacked with Scarlet Fever, should be closely watched, and their slightest complaint of noises or pain in the ears be at once reported

to the attending physicians. In the case of very young children, who give evidence of pain, but are unable to indicate the locality of it, pressure should be made below the Ear, when the cause will be instantly revealed. While convalescent, they should be carefully guarded against premature exposure.

MEASLES.

This disease, although not attacking the Ears as frequently as Scarlet Fever, still requires the watchful care of parents and physicians, as it might become very destructive to hearing, either by propagating itself to the External Canal, or through the Eustachian Tubes to the Middle Ear. In either case the slightest symptoms should be met by appropriate treatment.

SCROFULA.

The Mucous Membrane of Scrofulous children is very tender and irritable. They frequently suffer with chronic sore throat, enlarged tonsils,

and inflammation of the lining of the nose, accompanied by a constant discharge of matter or clear liquid from that organ, very often so acrid as to excoriate the parts with which it comes in contact. The edges of the nostrils and the upper lip are usually found sore and swollen. This condition easily predisposes the system to diseases of the Ear, and the utmost solicitude should be observed to guard these little sufferers against such a result.

Their dress should be warm, but light; their food substantial, but plain; they should have plenty of good air, and their sleeping apartments should, on that account, be well ventilated. In damp or wet weather they should be kept indoors, or if obliged to go out, should be well protected against dampness, as it is very injurious to them. During clear weather, even if cold, they can be in the street or the play-ground any reasonable length of time, and will be decidedly benefited by it.

If the hearing of scrofulous subjects becomes impaired, it is done very gradually. The child will have spells when it cannot hear quite well, followed by others when the hearing is as well as ever. This condition is very apt to deceive parents, who think that the child will outgrow

the difficulty, until, during one of the spells when the hearing is impaired, they wait in vain for its customary return.

It is then, and generally not until then, that parents become aware, that there is really something the matter with the child's ears, requiring attention.

Whenever the tonsils are found to be enlarged or the throat to be affected, the child should be put under proper medical treatment, as, by removing these affections. deafness will, in most cases, be prevented.

FOREIGN BODIES IN THE EAR.

Occasionally it will happen, by some mishap or through mischief, that a foreign body, as, for instance, a bead or bean, or such like thing, will be introduced into the Auditory Canal. Children will sometimes play such tricks on each other while playing.

A foreign body, if allowed to remain in the Ear for some time, will produce much pain and inflammation, of which deafness may be the ultimate result, though the alarm occasioned by such

an accident, is usually far greater than is warranted by the immediate danger, likely to accrue from it. Those unacquainted with the anatomy of the Ear, think even that the object will work its way into the brain, and produce death.

The greatest danger arising to the Ear from such accidents, is produced by the bungling attempts so frequently made for the removal of the body introduced. In some cases, the Ear is most unmercifully poked into with all sorts of instruments, in spite of the struggles of the child, until the object is not only pushed further into the Ear, but serious inflammation is excited. Cases are on record, where inflammation of the brain was caused by such rough manipulations, and death resulted in consequence of it.

The best thing to be done under such circumstances, is to take the child to as good a physician as can be found, who, with appropriate instruments, will soon remove the offending body, and administer an anesthetic to prevent all suffering, should the child be timorous, or the operation likely to be painful. In case the services of a physician cannot be procured as soon as desirable, the following directions for their removal will be found useful :

DIRECTIONS FOR THEIR REMOVAL.

Draw the Ear upwards and outwards to straighten the Canal as much as possible, then direct the child to incline the head to the side of the affected Ear, until it reaches a horizontal position, when, by gently shaking the head, the object, if not too large, will generally drop out. Should this not have the desired effect, throw some lukewarm water with a syringe into the Ear, and the body may be carried away with the reflux. The water should not be syringed in straight, lest, by hitting the object directly, it might drive it still further into the Ear, but should be directed more towards the walls of the Canal.

Whilst syringing, the child's head should be inclined a little to the side affected, so that the exit, of both the water and the object, may be facilitated.

Should the foreign body be of a porous or spongy nature, (which absorb fluids quickly,) the use of water is inadmissible, as it would increase the bulk of the object, and increase the mischief in consequence. To get rid of live in-

sects which enter the Ear, the Canal should be filled with warm water or warmed sweet oil, which will quickly destroy them.

DEAFNESS IN ONE EAR.

A great many persons affected with deafness in one Ear, exhibit the greatest carelessness in regard to it, entertaining the idea that Nature is kind enough to recompense them for the loss they sustained in one Ear, by doubling the power and usefulness of the other. They appear to disregard entirely the strong and unmistakable sympathy existing between two organs, whose functions are identical, and seem to forget that the causes which produced disease in the one Ear, may at any time operate unfavorably on the other.

Although, in some cases, deafness exists for years in one Ear, while the hearing in the other remains perfect, yet the liability of its becoming affected is ever present, and the slightest cause may produce the unwelcome result. With but very few exceptions, the sound Ear will, sooner or

later, be attacked ; there are but few cases on record, of persons who have been deaf in one Ear, going through life without becoming deaf in the other also.

The greatest caution should be exercised by such persons, to guard as much as possible against all influences, apt to operate unfavorably on the Ear. The deaf Ear should, by the aid of medical treatment, be brought to a healthy condition, even if its hearing could not be restored, for its diseased state, furnishes a constant source of danger to its healthy companion, and should be removed with the least possible delay.

SYMPTOMS OF DISEASES OF THE EAR.

IN spite of all precautions, the Ear will at times become affected ; but even then, deafness can in many cases be prevented, if suitable treatment is instituted in the primary stages of the disease. It will be remembered that the diseases most destructive to hearing, commence very insidiously, without pain, noises, or any symptoms calculated to alarm the patient, and that hearing becomes impaired so gradually, that no disease is suspected until the inability to hear common conversation, establishes the fact of deafness.

It is most important, therefore, to be able to detect the slightest defect in hearing, and I would advise the following method for that purpose :

METHOD OF DETECTING INCIPIENT DEAFNESS.

As soon as the least difficulty is experienced in hearing a whisper, or conversation carried on in a low tone, or when children have to be called or addressed several times before they pay any attention, the state of hearing should be tested in the following manner :

Let some one hold an ordinarily loud ticking watch, *six feet* from the Ears, and if the ticking cannot be heard readily at that distance, it may be taken for granted there is something wrong about the Ear which requires looking after, that does not admit of delay. This procedure will at once enlighten the mind of the adult as to the correct state of his hearing, and will, we trust, be the means of saving children undeserved rebuke or punishment, as well as afford parents an opportunity to have the difficulty attended to in time.

EAR-ACHE,

whether dull or violent, darting or throbbing, is always an evidence of a diseased condition of the Ear, and calls for a careful examination and suit-

able treatment. To avert danger to hearing, the causes which produce the pain must be removed, and this cannot be done by attempts so frequently instituted, merely to quiet the pain.

NOISES.

Noises in the Ears of whatever nature, whether resembling the roar of the ocean, the hissing of steam, the ringing of bells, or other sounds, are a sure indication of some abnormal condition, and their warning voice of impending danger to the hearing, should be faithfully and quickly obeyed.

DISCHARGE FROM THE EAR.

A slight discharge from the Ears will sometimes be noticed without any marked symptoms of disease having preceded it. Whenever this is the case, no time should be lost to have the Ears examined and the causes from which it emanated removed. The discharge, when appearing under such circumstances, proceeds from some mild form of inflammation of the Auditory Canal, which

can easily be removed if remedies are applied in time, but which, if allowed to go on, might produce the most serious effects.

WARNING AGAINST PROCRASTINATION.

As the spark which causes a conflagration destructive enough to lay a whole city in ashes, can be extinguished by the pressure of a finger, and the mighty avalanche, which crushes every thing in its course and buries whole villages under its ponderous masses of snow, could be arrested at its starting-point by the intervention of a hand, so the inflammation which causes an incurable deafness, can most generally be removed by but a few weeks' treatment, and all danger to hearing averted, if attended to in time. No delay, therefore, should be allowed to occur, in procuring medical assistance as soon as the slightest morbid condition of the Ear becomes manifest.

CAUTION AGAINST EMPIRICAL TREATMENT.

Let the reader beware of tampering with the Ear, by resorting to nostrums or by attempting to

be his own physician, nor delay procuring treatment on the ground of not having a professed Aurist within reach. Any well-educated physician is able to give better advice than a non-professional person, and may at least be able to arrest the progress of the disease, until the services of an expert can be obtained.

Physicians, however, who prescribe for deafness at random, and without a previous examination of the affected Ear, should be avoided, as unfit for the office of medical adviser in such cases.

REVIEW OF SOME OF THE POPULAR REMEDIES FOR DEAFNESS.

GREAT reliance appears still to be placed, on some popular remedies for the cure of deafness, and it is very seldom indeed, that patients apply to us who have not previously used one or another or sometimes several of them, for a greater or less extent of time, in order to obtain the expected relief. Only after being repeatedly disappointed, do they think of obtaining regular medical assistance. So much mischief is done by the action of these remedies, and by the valuable time which is lost during their application, (in which the disease is allowed to make steady progress,) that, though we have glanced at some of them in the description of the diseases of the Ear, a description of the

action of the most prominent ones may prevent, in many instances, hearing from being lost by their effect or through loss of valuable time.

SWEET OIL.

Sweet oil is the remedy which enjoys the honor, of being first recommended and tried, because people consider it entirely harmless, and if not beneficial, at least not injurious. The only cases where it can be of any benefit, are those of hardened wax, as that becomes softened by the oil, and its exit facilitated.

Deafness produces a sensation as though there was something stopping up the Ear, and hence the idea of hardened wax presents itself first to the mind. The sweet oil is then unremittingly dropped into the Ear, until the hearing, instead of improving, is found to be getting worse. Only one case of deafness out of a hundred probably, is caused by hardened wax; hence the impropriety of applying sweet oil indiscriminately, and without its being recommended by a competent physician, must at once be perceived. The impropriety of such a course is so much the more repre-

hensible, as the oil becoming rancid in the Canal, is very apt to produce inflammation, and is therefore far from being so harmless as it is supposed to be. Rattlesnake-oil, Eels-oil, Bear's-oil, Harlem-oil, Electric-oil, Acoustic-oil, Ethereal-oil, &c., &c., is only the old thing under a new name, offered by speculative individuals, who thoroughly understand the oily propensities of the deaf, and take due advantage thereof. All the oils mentioned, or any other oil that may be in the market, can be of no greater benefit than sweet oil, but may be far more injurious.

THE SYRINGE AND SOAP-SUDS.

The same idea of hardened wax which induces the people to resort to sweet-oil, induces them to use soap-suds, which is perseveringly squirted into the Ear, until the certainty is experienced, that there is nothing to come away. We are sorry to say, however, that in most cases something does come away, namely "*Hearing.*" To forcibly syringe water, or any liquid into the Ear, will not only produce inflammation of the lining membrane

of the Canal, but also, by being thrown on the unprotected Drum-head, will cause inflammation of that delicate membrane as well.

The dizziness so generally produced by syringing the Ear, ought to be sufficient, to apprise people of the dangerous effects this practice is apt to exercise on that organ.

GLYCERINE,

or the sweet principle of oil, has for a short time enjoyed a high reputation, because it is a grateful application in preternatural dryness of the lining of the External Canal, and tends to soften hardened wax. Its inefficacy in other affections of the Ear is now fully established.

A great many persons use it, to supply the place of wax of which their ears are deficient, attributing their deafness to its absence. Physiology, however, teaches us beyond a doubt, that the ear-wax has nothing whatever to do with hearing; hence the endeavor to supply this natural secretion by artificial means, is entirely useless, as far as hearing is concerned.

SULPHURIC ETHER.

About two years ago, the newspapers and several medical journals, related some wonderful cures of deafness, said to have been performed in the city of Paris, by a certain Mademoiselle Cleret, who has since become insane and died. The remedy consisted in the use of Sulphuric Ether, dropped into the Ear. This treatment had to be continued for some length of time. Great results were claimed for this application, and Sulphuric Ether at once came into great demand, and was persistently dropped into a multitude of Ears, with a view to restore lost hearing. Its effects, however, proved so different from what had been expected, that it very soon got into disrepute. Ether applied locally is a stimulant and rubefacient, and hence inflammation and pain were more or less produced by its application, resulting, in some cases which happen to come under our notice, in permanent injury.

ELECTRICITY.

Electricity is another remedy whose powers have been fully invoked, for the cure of deafness,

not only without the slightest success, but to the manifest detriment to hearing. Electricity is a temporary nervous stimulant and excitant, which has proved unavailing even in cases of diseases of the Ear, where its application was indicated. Being frequently applied, however, in cases where the deafness arose from some inflammatory process in the Ear, its exciting powers increased the inflammation, and consequently rendered the patient worse instead of better.

ARTIFICIAL DRUM-HEADS,

the suggestion of Mr. Toynbee, of England, are used with some benefit in some of the cases where the natural one has been lost through inflammation. They consist of a small disk of vulcanized gutta-percha, with a little wire attached, and are pushed into the ear far enough to reach the small bones, when by establishing the broken connection between them and the vibration of the air, hearing is improved. While benefit is experienced in some cases, in many others hearing is not in the least improved. They may even produce irritation in the External Canal, rendering

their removal necessary. So little is understood, regarding the cases in which their use is indicated, that patients have frequently applied to us, using artificial drum-heads, whose natural ones were perfect in every respect, and who were greatly surprised and chagrined at not receiving any benefit from their use.

EAR-TRUMPETS.

Ear-trumpets increase the volume of sound, and prevent it from being lost or broken in the air, and thereby improve hearing. They should never be used, however, except in cases where hearing cannot be improved by treatment, and where the deafness amounts to such a degree, that any thing which improves hearing in the least, proves acceptable. The Acoustic nerve, as well as the acoustic apparatus of the Ear, soon gets accustomed to the stimulus of an increased volume of sound, and therefore in more or less time after the commencement of the use of an Ear-trumpet, the wearer cannot hear any better with it, than he formerly could without it, and not near as well without it, as he could before he used one at all ; the power of

Ear-trumpets being limited, they cannot be increased so as to supply the continual stimulus required. The small Ear-trumpets advertised as "Auricles," attached to the head by a spring, are the most objectionable, because their small size prevents their efficiency, whilst their constant presence creates an irritation of the External Canal. They are nothing, in the world, but a commercial speculation.

DEAF-MUTISM ;

OR, DUMBNESS IN CONNECTION WITH DEAFNESS.

SPEECH is one of the peculiar attributes of man, and the most important means of communication between him and his fellows. It exercises therefore the greatest possible influence, on his physical being as well as on the development of his mental faculties.

It must be borne in mind that vocal sounds, and speech or articulated language, are two things entirely different ; the former may be produced in great perfection, when there is no capability for the latter. This leads us at once to infer that the instrument for the production of vocal sounds, is distinct from that by which these sounds are modified into articulate speech ; this we easily find to

be the case, as the voice is unquestionably produced in the larynx, whilst the modifications of it, by which language is formed, are for the most part effected in the oral cavity.

In the adjustment of the muscles of the larynx for the production of vocal sounds, we are guided to a great extent by the sense of hearing. In the first instance they are learned under the guidance of the sounds actually produced, but subsequently they are effected voluntarily, in accordance with the mental conception of the tone to be uttered, which conception cannot be formed, unless the auditory sense has previously brought similar tones to the mind.

Among other important offices of hearing, therefore, is that of supplying the means by which speech is developed, and those who are born entirely *deaf* are also *dumb*; that is, they do not spontaneously or imitatively form articulated sounds, though not the least defect exists in their organ of voice.

Even after speech has been completely developed, it is sometimes lost or forgotten, should total deafness supervene in early childhood. Children have been brought to us for examination, who having become totally deaf at the age of ten and

even twelve years, forgot by degrees the words by which they were wont to convey their ideas, until at length every recollection of language being obliterated from memory, they were as dumb as those who had been born deaf. Such cases are certainly sad and affecting in the extreme, and they present the strongest possible reason, why diseases of the Ear should not be neglected in infancy or childhood.

Of the great difficulty experienced in the acquisition of speech, when the muscular movement of the larynx is not directed by the auditory sense, the case of the Rev. Dr. Kitto, a talented English author, whose eloquent and touching remarks in reference to his own unfortunate condition we had occasion to quote in another part of this work, furnishes a valuable example. Carpenter thus relates it, in his work on Physiology : “Dr. Kitto became deaf in consequence of an accident occurring in childhood, which left him for some time in a state of extreme debility, and when he attempted to speak, it was with considerable pain in the vocal organ. This pain probably resulted from the unaccustomed effort which it was necessary to make, when the usual guidance was wanting ; being analogous to the uneasiness which we experience

when we attempt to move our eyes with the lids closed. His voice at that time is described as being very similar to that of a person born deaf and dumb, but who had been taught to speak. With the uneasiness in the use of the vocal organs, was associated an extreme mental indisposition to their employment; and thus for some years the voice was very little exercised. Circumstances afterwards forced it, however, into constant employment, and great improvement subsequently took place in the power of vocalization, evidently by attention and the indications of the muscular sense. It is a curious circumstance, fully confirming this view, that the words which had been in use previously to the supervention of the deafness are still pronounced (such of them, at least, as are kept in employment) as they had been in childhood; the muscular movements concerned in their articulation, being still guided by their original auditory conception, in spite of the knowledge derived from the information of others, that such pronunciation is erroneous. On the other hand, all the words subsequently learned, are pronounced according to their spelling; the acquired associations between the muscular sensations and the written signs being in this case the obvious guide."

A further illustration of the great aid which we derive from hearing in the formation of vocal sounds, is furnished by the cases of those persons, who, having become totally deaf at any period in life, are unable to control their vocal organs, and speak therefore in an unsteady, wavering tone of voice ; speaking sometimes in an unusually loud and bellowing tone, and at other times in a mere whisper. Occasionally they sink their voice to so low a pitch, that although their lips are seen to move, no sound whatever is audible.

In the middle ages, when superstition played such an important part in the formation of opinions and ideas, the lot of deaf-mutes, this most unfortunate class of human beings, was hard indeed. Instead of receiving sympathy and aid, they were looked upon as accursed by heaven, shunned as outcasts, treated not much better than the brutes, and sometimes even not as well. At present, however, their condition is vastly improved. Through the patient labor of some noble philanthropists, a system of instruction has been established, by the means of which they can receive a good and even scientific education, and become useful members of the human family.

Society has become fully aware of the duties

she owes these unfortunate ones, and institutions for their education are now established in every civilized country.

It is principally by signs that instruction is imparted to them, certain signs being adopted to represent objects and the letters of the alphabet. This system is nothing but an extensive improvement and modification, of the manner by which deaf-mutes invariably communicate to us their ideas; they instinctively resort to mimicry to manifest their desires, wants, likes or dislikes, approbation or disapprobation.

Some attempts have also been made to teach deaf-mutes to speak; but little success however has so far been accomplished. The method of teaching is as follows: The teacher utters certain sounds in a slow and distinct manner, and by directing the attention of his pupils to the movements of his lips, as well as to the action of the muscles of his neck, induces them to imitate both as near as possible. Although in this way some have acquired the power of speech to a certain extent, from insufficient guidance in the control of the muscles of the larynx, the voice is always unsteady, inharmonious and disagreeable, and the pronunciation very imperfect indeed.

To show the comparative merits of the two systems of education, (by signs or speech,) we cannot do better than to quote extracts from a letter of Dr. Merniere, Physician to the Institute of the Deaf and Dumb at Paris, to the Academy of Medicine of that city. The letter was translated by Mr. Laurent Clerc, (himself a deaf-mute and many years ago one of the pupils of the celebrated Abbé Sicard,) and appeared in the "American Annals of the Deaf and Dumb," edited by Luzern Rae.

"In 1847, there was at Phorzheim in the Grand Duchy of Baden, a congress of all the teachers of the German deaf and dumb. Invitations had been addressed to the professors of the neighboring countries. Mr. Morel, now Principal of the Bordeaux Institution, attended that convention. He is familiar with the German language. He took an active part in the acts of that assembly ; and it results from the verbal proceedings collected by this honorable professor, that the French pupils generally instructed by the mimic method possess, after studying a certain number of years, a more extensive knowledge than those who, by great exertions, are taught to speak.

"The reason of this difference is very simple.

Much less time is required to learn a fact, than to express it in words ; ideas are better than words ; a child has more interest to know, than to say ; intellectual furniture is a hundred times preferable to the articulation of certain sounds. Our pupils in the Paris Institution know a great deal more than they can express ; in a word, ours think much while theirs endeavor to say a little.

“Such is the summary of a conference in which the French professor had to struggle against men devoted to another system ; but the German professors have been brought by evidence to see, that the method followed in France, agreed better with a majority of the deaf and dumb, and incontestably gave them a greater intellectual value, and rendered them more useful, better and more fit for the society in which they are called to live. We voluntarily acknowledge on our part, that the oral method is more satisfactory to those who live with the deaf and dumb ; but I may be permitted to say, that between two egotisms, it is but just to give the preference to that of the more interested party. The deaf and dumb, it is not to be denied, are less made for us, than we are for them ; it becomes us who are the rich, the favored, to descend to them ; we ought to take the first step and not to im-

pose upon them the torture of articulating with much pain, a few words which they do not understand, and which they renounce as soon as they are no longer under the eyes of their masters : in one word, the deaf and dumb, whatever may be said to the contrary, form a class apart ; they want artificial methods to put themselves in communication with us ; we ought, therefore, to furnish them with the greatest possible number of these means of communication, and hitherto France has not failed in her duty toward her children, deprived by nature of the sense of hearing.

“ Thus the Paris school endeavors to make good deaf and dumb citizens ; deaf and dumb instructed, moral, laborious ; deaf and dumb provided with all the means of communication with other men ; they write rapidly ; in the absence of pen or pencil, they have the manual alphabet ; this failing, (as when speaking persons do not understand it,) they have pantomime, so expressive, so clear, so rapid ; finally, when no one of these means can reach the stupid mind of an ordinary speaking person, the articulation of sounds comes to the succor of both, and some phrases more or less correctly *pronounced*, remove the obstacles between the two interlocutors. If the speaking

person articulates well ; if he takes care to speak slowly by emphasizing all the syllables ; if his mouth is well shaped ; if it is not hidden by a long beard ; if his face is sufficiently expressive, then the deaf and dumb man can read on his lips ; and this is the last means of understanding each other. But all these conditions are not to be had as easily as can be imagined ; either the one or the other, too often, is wanting, and all these advantages so laboriously acquired, are rendered useless.

“Reading on the lips is an art of infinite delicacy ; an exercised eye is necessary ; but here, the eye is even less useful than quick and bright intelligence ; a phrase must be guessed by the aid of a word hastily seized. The logical induction which leads like a dart, from a word to an idea, must be resorted to ; and this is so true, that but a small number of individuals are found, who can acquire much of this marvellous faculty. Those who, hitherto, have attained the highest degree of perfection, belong to families in which every thing has been done, to attain this object. These are miracles of maternal love, prodigies of patience required, and yet these are only efficacious among children who are most unfortunately endowed with intelligence.

“I believe, Mr. President, and I dare hope that the Academy will also think like myself, that from the nature of these rare and exceptional cases, it is impossible to make a uniform rule of public instruction ; three-fourths of the deaf and dumb, entirely so or not, submitted to this system of instruction, will not derive any real profit. These rules prevail at the Paris Institution for the deaf and dumb. The State, in its active generosity, dispenses instruction to all those who cannot acquire it by ordinary methods. For the deaf and dumb it establishes schools in which experienced teachers impart to those deprived by nature, all the knowledge they need, to discharge the duties of useful citizens ; it does not look for imaginary perfections ; it contents itself with meliorating evil, diminishing misfortune, and restoring to the great human family those among its children, whom ill-fate has separated from it.

“The auricular education of the deaf and dumb ought to be considered impracticable ; it can only succeed with one who has been cured of his deafness.”

The causes of deaf-mutism are various. There may be malformation of the Ear, such as absence of the Labyrinth, in part or whole, obliteration of

the Tympanum, &c., &c.; in some cases we can trace it to a hereditary tendency, and in others it is owing to some disease of the Ear occurring in infancy. As soon, therefore, as the slightest doubts exist in reference to a child's ability to hear, medical advice should be obtained. Many cases, by proper and timely treatment, are susceptible of relief, which if neglected would become hopelessly incurable.

THE END.

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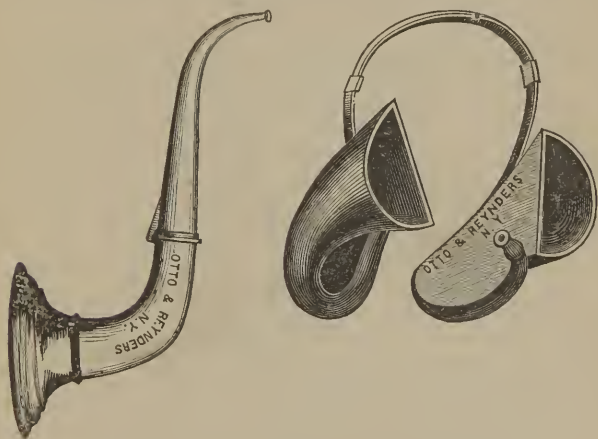
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